

EXHIBIT A

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF PENNSYLVANIA**

IN RE: PROCESSED EGG PRODUCTS
ANTITRUST LITIGATION

MDL Docket No. 2002
08-md-02002 (GP)

THIS DOCUMENT RELATES TO:

The Kroger Co., et al v. Sparboe Farms, Inc., et al, Case No. 2:10-cv-06705 GP (E.D. Pa.)

Giant Eagle, Inc. v. Sparboe Farms, Inc., et al, Case No. 2:11-cv-00820 GP (E.D. Pa.)

Supervalu Inc. v. Sparboe Farms, Inc., et al., Case No. 2:10-cv-06736 GP (E.D. Pa.)

Publix Super Markets, Inc. v. Sparboe Farms, Inc., et al, Case No. 2:10-cv-06737 GP (E.D. Pa.)

Kraft Foods Global, Inc. et al v. United Egg Producers, Inc. et al, Case No. 1:12-cv-00088 GP (E.D. Pa.)

Winn-Dixie Stores, Inc., et al. v. Cal-Maine Foods, Inc., et al., Case No. 2:11-cv-00510-GP (E.D. Pa.)

EXPERT REPORT OF MICHAEL R. BAYE, PH.D.

Highly Confidential – Subject to Protective Order

January 22, 2015

Highly Confidential – Subject to Protective Order

10. While perfect coordination among competitors is generally difficult in industries where there are numerous unorganized producers, the economics literature indicates that when a trade organization is involved, collusive (e.g., coordinated) output reductions and higher prices can arise even if the alleged conspiracy was not perfect. In the present matter, guidelines established by the United Egg Producers (UEP) industry trade association impact at least 85 percent of U.S. egg production. Thus, as a matter of economics, supply restrictions coordinated through the UEP (e.g. cage-size restrictions or a ban on backfilling) could significantly reduce egg production and increase the prices of shell eggs and egg products by limiting the ability of individual egg producers to compete in their unilateral self-interest. Numerous documents are consistent with the actions of the UEP resulting in coordinated output reductions and higher prices.

11. Based on my review of the record and economic training, Plaintiffs' allegations are economically plausible. Features of the egg industry (e.g., highly inelastic market demand and barriers to entry) were conducive to—and actions by industry trade associations during the alleged conspiracy (e.g., the communication and monitoring/policing of coordinated supply reductions) were consistent with—the allegations that the conspiracy raised prices through supply reductions coordinated by the UEP and USEM industry trade associations.

12. I conduct an econometric analysis to statistically examine whether actions coordinated through the UEP had a statistically and economically significant effect on supply and prices. A variety of accepted economic and econometric approaches indicate that the alleged conspiracy—not benign demand or supply shocks—reduced flock size and egg production by economically and statistically significant amounts. These results account for other factors that might have impacted supply and demand, including seasonality, changes in input prices, population, income, and potential changes in consumer preferences. Additionally, the methodology on which these econometric results are based does not assume that the alleged conspiracy was 100 percent effective.

13. My econometric analyses indicate that, but-for the alleged coordinated supply restrictions implemented through the UEP, the prices of shell eggs and egg products would have been significantly lower. I find that overcharges vary across Plaintiffs because of differences in the timing of their purchases, the types of eggs purchased, and the nature of their contracts. My

C. Demand for Eggs Is Derived from Consumer Demands for a Variety of Products

58. The demand for shell eggs and egg products is derived from consumer demands for eggs as a standalone food, eggs as food ingredients, and processed foods that contain or are entirely made up of shell eggs and egg products.

59. Grocery retailers demand eggs because customers visiting their retail stores demand shell eggs (e.g., cartons of eggs). Economic theory indicates that, because their customers' demand for eggs is highly inelastic (as noted above in Section A), a grocery store's demand for shell eggs is also highly inelastic. Intuitively, because a carton of eggs comprises a small percentage of the typical consumer's grocery outlay and there are no close substitutes for eggs, the majority of grocery shoppers do not significantly reduce their purchases of eggs when the price increases.⁹⁴ Consequently, retailers tend to reduce their purchases of shell eggs from egg producers by a small amount when the prices they are charged increase by a large amount.

60. Because consumers have heterogeneous tastes for different sizes, grades, and forms/types of eggs, retailers typically purchase a variety of types of shell eggs from egg producers (e.g., medium, large, extra-large, and jumbo sizes, white and brown eggs, as well as cage free, organic, and other specialty shell eggs).

61. Food manufacturers purchase egg products because they are necessary for producing the food products demanded by their customers. Because different foods require different types of egg products, food manufacturers purchase a variety of different types of egg products. For instance, liquid yolk eggs are a key input in the production of mayonnaise; liquid whites are the main ingredient in pre-packaged retail liquid egg products (e.g. Egg Beaters Original are 99 percent liquid whites)⁹⁵ and some breakfast sandwiches (which food manufacturers may cook and then freeze); dried eggs are key inputs in the production of baked goods like cookies and

⁹⁴ Even though eggs are relatively inexpensive, one trade group notes that egg protein "is the highest quality protein of any food. One egg of any size equals one ounce of lean meat, poultry, fish or seafood in the food groups." (Incredible Egg, "Nutrition Nuggets," available at: <http://www.incredibleegg.org/egg-facts/trivia/nutrition-nuggets>. Accessed January 12, 2015.)

"Some products (e.g. milk, eggs, sugar, potatoes) are price inelastic because they lack close substitutes and, taken separately, do not account for a large proportion of the food budget." David Colman and Trevor Young, *Principles of Agricultural Economics: Markets and Prices in Less Developed Countries*, Cambridge University Press, 1989, p. 100.

⁹⁵ Egg Beaters, "Frequently Asked Questions," available at: <http://www.eggbeaters.com/healthy-eating-habits-about-us/compare-egg-nutrition?#egg-whites>. Accessed January 12, 2015.

cake mixes; frozen eggs are used to make ice cream and other foods requiring liquid eggs but allow for longer shelf life.⁹⁶

D. There Are No Close Substitutes for Eggs

62. As discussed above, egg production is essential for making or processing shell eggs and egg products; the process of raising hens, feeding and housing them, collecting their eggs, and processing the eggs cannot be circumvented by Plaintiffs or other direct purchasers. My review of the record indicates that there are no commercially viable close substitutes for eggs. This is consistent with the way eggs are marketed; according to the AEB “[r]esearch shows no single substitute matches the functionality of egg products.”⁹⁷

63. Grocery retailers do not have alternatives that are close substitutes for eggs. Consumer demand for shell eggs is very inelastic; while there may be some degree of substitution among different sizes, types, and grades of shell eggs, grocery retailers would not satisfy customer demand by substituting away from eggs towards alternative products.⁹⁸

64. Food manufacturers do not have alternatives that are close substitutes for eggs. Recipes typically utilize eggs and other inputs in fixed proportions, and it is well-documented in the economics literature that these sorts of production processes absolutely limit substitution.⁹⁹ Additionally, different processes require different forms of eggs, and this likely limits substitution within different classes of eggs and egg products.¹⁰⁰ For example, liquid or frozen egg products are not a close substitute for dried eggs in manufacturing a dried cake mix. Regardless, food manufacturers cannot easily substitute other inputs for eggs in their recipes.

⁹⁶ Michael Foods, "Froze'n Ready Frozen Liquid Eggs," available at: <http://www.michaelfoods.com/food-ingredients/pdf/MICHAEL-FOODS-FROZE-N-READY-FROZEN-LIQUID-EGGS-YOLKS-AND-WHITES-ENGLISH.pdf>. Accessed January 12, 2015.

⁹⁷ The American Egg Board, "Accept No Substitutes," available at: <http://www.aeb.org/images/website/documents/food-manufacturers/nutrition-and-trends/functionalityWhitePaper.pdf>. Accessed January 12, 2015. (See, e.g., "Eggs possess unique nutritional properties and contribute desirable functional attributes unequaled by any single egg alternative.")

⁹⁸ "Some products (e.g. milk, eggs, sugar, potatoes) are price inelastic because they lack close substitutes and, taken separately, do not account for a large proportion of the food budget." David Colman and Trevor Young, *Principles of Agricultural Economics: Markets and Prices in Less Developed Countries*, Cambridge University Press, 1989, p. 100.

⁹⁹ When inputs are used in fixed proportions (a so called Leontief technology), there is zero substitution among inputs. (See e.g.: Hal Varian, *Microeconomic Analysis*, WW Norton and Co., 1984, p. 33; Walter Nicholson, *Microeconomic Theory: Basic Principles and Extensions*, 9th ed. (Thomson South-Western, 2005), pp. 195-197.)

¹⁰⁰ See also ¶197.

for building new hen houses can take “several months to multiple years” and “even after construction is completed, the entire process of populating a henhouse takes 18 months to two years to complete.”¹³⁰ Additionally, contracts may need to be in place before capital is available.¹³¹

85. For these reasons, producers are unlikely to expand or enter in response to short-term increases in prices. This, coupled with the time required to build and permit new hen houses, indicates that entry is unlikely to defeat price increases in a timely fashion. This is consistent with the documents referenced above indicating that entry or expansion tends to be slow in response to increases in prices.

86. I conclude by noting that, while entry or expansion is unlikely to defeat price increases stemming from coordinated reductions in supply, for some types of eggs, it is theoretically possible that adverse price effects might be mitigated through supply-side substitution. Of course, the degree to which vertically integrated firms may substitute between the production of different types of shell eggs and/or egg products is limited by their contractual commitments to buyers to provide specified quantities of specific types of eggs. Regardless of the degree of supply-side substitution, an overall reduction in egg production means there are fewer eggs available to make or process into shell eggs or egg products.¹³² While economic theory indicates that this will tend to elevate the prices of all shell eggs and egg products, the ultimate magnitude of price increases is an empirical question. I note that my empirical analyses in Sections X.D

breaking plant approximately April 15th of 2009.” (Henning Deposition, pp. 69-70.)

The cost of construction permits and legal fees ranged from \$10,000 to \$270,000 in the period 2009-2012. (MFI0023767-8, at MFI0023767.)

¹³⁰ Defendants’ Memorandum in Opposition to Plaintiffs’ Motion for Class Certification, filed October 30, 2014, p. 40.

¹³¹ “Q. Why was that important to Fremont Farms of Iowa that Michael Foods make that commitment? A. Because Farm Credit Services of America would not extend us the credit to be able to finance these facilities and build them without that commitment. Q. And by “that commitment,” you mean the long-term purchase commitment? A. That’s correct.” Henning Deposition, p. 37.

¹³² Recall that some portion of egg products are produced from the small and cracked eggs that shell egg producers sell to breaking facilities. (Gideon Zeidler, “Further-Processing Eggs and Egg Products,” in *Commercial Chicken Meat and Egg Production*, 5th Edition, ed. Donald Bell and William Weaver, 2002, p. 1164.) If there are fewer eggs produced overall, there will be fewer small and cracked eggs available for making egg products. In order to maintain the same quantity of egg products, there would necessarily need to be a reduction in the sale of shell eggs. The resulting higher price for shell eggs would provide incentives for producers to shift eggs away from egg products and towards shell eggs. Thus, the prices of shell eggs and egg products will rise generally; the magnitudes of the price increases are an empirical matter.

and XII allow for the possibility of entry and/or expansions, and also allows for the possibility that suppliers substitute between producing different types of shell eggs or egg products.

VIII. Eggs and the United States Are Relevant Product and Geographic Markets

87. As noted by the Federal Trade Commission and the Antitrust Division of the United States Department of Justice, “[m]arket definition focuses solely on demand substitution factors, i.e., on customers’ ability and willingness to substitute away from one product to another in response to a price increase or a corresponding non-price change such as a reduction in product quality or service.”¹³³

88. The documents and data in this matter indicate that “Eggs” are a relevant product market and “The United States” is a relevant geographic market.¹³⁴ The reasons for these conclusions are discussed below and also corroborated throughout my report.¹³⁵

A. Eggs Are a Relevant Product Market

89. A relevant product market consists of a set of products such that “a hypothetical profit-maximizing firm, not subject to price regulation, that was the only present and future seller of those products (‘hypothetical monopolist’) likely would impose at least a small but significant and non-transitory increase in price (‘SSNIP’) on at least one product in the market.”¹³⁶

90. As documented in Sections VII.A, VII.D and XII.A, there are no close substitutes for eggs—regardless of whether one considers shell, liquid, dried, or frozen eggs.

¹³³ Department of Justice & Federal Trade Commission, *Horizontal Merger Guidelines*, 2010, p. 7.

¹³⁴ As discussed below, my approach to market definition is consistent with the approach used by the Antitrust Division of the U.S. Department of Justice and the U.S. Federal Trade Commission, and is based on the “hypothetical market test.” I use the term “a relevant” market because, as noted by the DOJ and the FTC, “The hypothetical monopolist test ensures that markets are not defined too narrowly, but it does not lead to a single relevant market.” (Department of Justice & Federal Trade Commission, *Horizontal Merger Guidelines*, 2010, p. 9.)

¹³⁵ See Sections XI.A and XI.B.

¹³⁶ Department of Justice & Federal Trade Commission, *Horizontal Merger Guidelines*, 2010, p. 9.

91. The documentary record indicates that, “[a]n egg is an egg is an egg,”¹³⁷ or, expressed differently, the “egg market is just one pie.”¹³⁸ A reduction in egg production means that fewer eggs are available for making/processing shell eggs or egg products.

92. The record in this case, as well as my econometric analysis in Section XII.A indicates that a hypothetical monopolist could profitably increase the price of virtually every egg and egg product in this market; it therefore follows that a hypothetical monopolist *likely would impose at least a SSNIP on at least one product in the market*. In particular, if the *market* elasticity of demand is -0.10, a hypothetical monopolist controlling that market could profitably increase prices of shell eggs and egg products.¹³⁹

B. The United States Is a Relevant Geographic Market

93. The FTC and DOJ note that the relevant geographic market is the region containing the “firms with relevant production, sales, or service facilities in that region”¹⁴⁰ in which “a hypothetical profit-maximizing firm that was the only present or future producer of the relevant product(s) located in the region would impose at least a SSNIP from at least one location [when] the terms of sale for all products produced elsewhere are held constant.”¹⁴¹

94. The analyses contained in my report indicate that, in the present matter, the U.S. is the geographic area that satisfies this test. The United States is the region satisfying this test because buyers have not significantly shifted purchases to suppliers outside of the United States in response to price increases. In particular, about 99 percent of eggs consumed in the U.S. come from U.S. facilities,¹⁴² and these facilities are located throughout the U.S.¹⁴³ Based on my review of the documentary record, I am unaware of any instance in which a defendant or co-

¹³⁷ BELL002381-406, at BELL002384.

¹³⁸ Deposition of Gene Gregory (Former President of UEP) on June 26, 2013, p. 558.

¹³⁹ If market demand is inelastic, a hypothetical monopolist would increase profits by raising price. See e.g.: Paul A. Samuelson and William D. Nordhaus, *Economics*, 15th Edition, McGraw-Hill, Inc., 1995, p. 58.

¹⁴⁰ Department of Justice & Federal Trade Commission, *Horizontal Merger Guidelines*, 2010, p. 13.

¹⁴¹ Department of Justice & Federal Trade Commission, *Horizontal Merger Guidelines*, 2010, p. 13.

¹⁴² For example, from August 2005 through December 2012, total imports of eggs were 0.32 percent of domestic consumption. From 1990 to 2012, total imports of eggs were 0.23 percent of domestic consumption. (USDA data.)

¹⁴³ The named Defendants and co-conspirators have facilities in at least 40 states, covering every major region of the contiguous U.S.

IX. Economic Theory and the Record Indicate that Defendants and Co-Conspirators Stood to Gain from the Alleged Conspiracy

97. As discussed below, Defendants and co-conspirators who sold shell eggs and egg products to direct purchasers stood to gain from the alleged conspiracy. As a matter of economics, coordinated supply reductions generally lead to higher prices in industries where demand is inelastic and entry is not timely.

98. Before proceeding, I note that a hypothetical coordinated supply restriction need not lead to an absolute reduction in output in order to be anticompetitive. As a matter of economics, coordinated supply reductions have an anticompetitive effect if, but-for the coordination, producers would have increased their output by, for example, 2 percent, and the coordination led them to increase their output by only 1 percent. For purposes of assessing whether the alleged conspiracy resulted in a coordinated output reduction, the relevant comparison is whether actual flock size (or egg production) declined relative to the level that would have existed “but for” the alleged conspiracy. I also note that, while coordinated reductions in output elevate profits relative to what they would have been “but for” the coordinated reduction in output, it is possible that these profits are negative, owing to high fixed or variable costs. However, any such losses are lower than they would have been “but for” the coordinated reduction in output.

A. Economic Theory and the Record Indicate that Defendants and Co-Conspirators Had the Ability to Coordinate Reductions in Industry Supply

99. I now highlight some of the mechanisms different suppliers in the relevant market could use to participate in the alleged conspiracy. As noted earlier, economic theory indicates that trade associations UEP and USEM would likely be key to the implementation of the alleged conspiracy. Here I demonstrate that an individual UEP, USEM, or UEP Certified member’s ability to participate in certain aspects of the alleged conspiracy is not predicated on any assumption that the shell eggs or egg products it sold were produced by its own laying hens.

where plaintiffs purchased the products that are relevant to this proceeding. (Department of Justice & Federal Trade Commission, *Horizontal Merger Guidelines*, 2010, p. 14).